

# Rediscovery of *Cladiucha insolita* Konow (Hymenoptera, Tenthredinidae), description of the male and intraspecific variation

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## Abstract

*Cladiucha insolita* Konow was described in 1902 from a single female from Vietnam, and this has remained the only recorded specimen. A series from Laos associates the sexes and shows some variation in wing venation, size, and number of antennomeres. The female is redescribed, the male is described for the first time, and intraspecific variation is noted.

## Keywords

sawflies, Allantinae, southeastern Asia

## Introduction

*Cladiucha* Konow is an unusual tenthredinid genus in that the antennae are multi-antennomered, serrate in the female and biramose in the male, more similar to Diprionidae and some Pergidae rather than the usual filiform, nine-antennomered antennae of Tenthredinidae. Benson (1938) placed the genus in the subfamily Allantinae because of similar wing venation and other structural characters (Benson 1938) but created a new tribe, Cladiuchini, for the genus. Taeger et al. (2010) continued with placement

in the Allantinae but did not recognize tribes. Wei (1997) recognized the Cladiuchini but placed it in a new subfamily, Megabelesinae, along with *Megabeles* Takeuchi, *Tripidobeles* Wei, and *Conobeles* Wei.

Four species of *Cladiucha* are known: *C. insolita* Konow, 1902, *C. manglietiae* Xiao, 1994, *C. magnoliae* Xiao, 1994, and *C. megatheca* Wei, 2010. Xiao (1994) and Wei (2010) each gave a key to species. The latter three species are known from China, and the host plants are members of the Magnoliaceae: *C. manglietiae* is on *Manglietia hainanensis* Dandy and *C. magnoliae* and *C. megatheca* are on *Magnolia officinalis* Rehd. et Wils. (Xiao 1994, Wei 2010). *Cladiucha insolita* was described from a single female from Indo-China, „Tonkin (Mauson-Gebirge)“ (Konow 1902), in northern Vietnam. To this date, this has been the only recorded specimen, and the male was not known. A long series of both sexes of this species was recently collected in Laos, and here I describe the male and note some intraspecific variation.

## Materials and methods

Specimens are from the collection of the Oberösterreichische Landesmuseen, Linz, Austria (OLML). A few are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (USNM).

The holotype of *Cladiucha insolita* (Fig. 1) is in the Senckenberg Deutsche Entomologische Institut, Müncheberg, Germany (SDEI), and was studied during my visit in 2006. It is broken, with the abdomen and parts of the legs, antennae, and wings glued onto a piece of cardboard beneath the specimen. Paratypes of *C. magnoliae* and *C. manglietiae* in the USNM were also examined.

Images were acquired through an EntoVision micro-imaging system. This system included a Leica M16 with a JVC KY-75U 3-CCD digital video camera or a GT-Vision Lw11057C-SCI digital camera attached that fed image data to a notebook or desktop computer. The program Cartograph 6.6.0 was then used to merge an image series into a single in-focus image.

## Results

### *Cladiucha insolita* Konow

Figs 1–10

*Cladiucha insolita* Konow, 1902: 389.—Xiao 1994: 20 (in key).—Wei 2010: 639 (in key).

**Description.** Female: Length 15–17 mm (holotype, 17 mm). Black, with light purple metallic lustre, with following white: labrum brown to white; apical 3 or 4 antennomeres ventrally; narrow stripe on upper surface of hind coxa; outer surface of apical half of fore femur; inner surfaces of basal two-thirds of mid and hind femora; fore and



Photos: C. Kutzscher

**Figure 1.** Holotype of *Cladiucha insolita*. Lateral and dorsal views, labels attached, and broken parts glued onto cardboard beneath specimen (from Taeger and Kutzscher 2017).

mid tibiae except for black apex; basal third of hind tibia; fore and midtarsi; small lateral spot on first tergite; small transverse stripe at center of apical tergite; apical margin of apical tergite; cercus brown to white. Wings darkly uniformly infuscated; veins and stigma black. *Head*: With short, white hairs; rugose to punctate on frons, interantennal area, and clypeus, shiny with scattered punctures on vertex and gena. Antenna (Fig. 5) with 21–23 antennomeres (holotype 23), first and second about as long as broad, third about  $2 \times$  longer than broad, fourth to 19<sup>th</sup> or 20<sup>th</sup> antennomeres with apex broader than long and with short apically projecting rami; length of rami about equal to basal width of antennomere; apical 3 antennomeres without rami; apical 5 or 6 antennomeres with pale ventral sensory areas; length  $1.8 \times$  head width. Malar space very short, less than half diameter of front ocellus; lower interocular distance  $1.3 \times$  eye height; distances between eye and hind ocellus, between hind ocelli, and between hind ocellus and posterior margin of head as  $1.0:0.8:1.3$ ; postocellar area slightly convex, about  $1.2 \times$  broader than long. *Thorax*: Shiny with short, white hairs; almost impunctate, with very few small widely-spaced punctures on mesonotum and somewhat larger punctures on posterior half of mesoscutellum and posttergite. Forewing with vein 2A+3A basal to the anal cross vein complete, faint, or partially atrophied (partially atrophied in holotype). Hindwing without cell M, but partially present or present in about half of specimens examined (absent in holotype); anal cell with short petiole. Tarsal claw with long inner tooth, longer and stouter than outer tooth. Hind basitarsus about  $5.0 \times$  longer than broad. Pulvilli on hind tarsomeres 1–4, those on 3 and 4 larger than those

on 1 and 2. *Abdomen*: Shiny. Sheath (Fig. 8) uniformly slender in dorsal view; straight above and rounded at apex and below in lateral view. Cercus about  $3.0 \times$  longer than broad, half length of sawsheath. Lancet (Fig. 7) with about 30 serrulae; serrulae flat with 4 or 5 anterior subbasal teeth, serrulae indistinct at apex.

Male: Length 10–13 mm. Color as female except hind coxa entirely black; abdomen black; harpe whitish on apical third to half. Similar to female except for antenna and sexual characters. *Head*: Antenna (Fig. 6) with 27–29 antennomeres, bipectinate except apical antennomere; apical antennomere rounded, blunt at apex; rami long, those of central rami equal to length of 6 or 7 antennomeres; third antennomere with inner ramus about half length of outer ramus; length  $1.5 \times$  head width. *Abdomen*: Hypandrium rounded at apex. Genitalia in Figs 9, 10; harpe slightly expanded toward apex, apex broadly rounded; penis valve sharply bent, valviceps oval.

**Specimens examined.** LAOS: NE Laos, Hua Phan Pr., Mt. Phu Pane, ~1500 m, 20°12'N, 103°59'E, S-Jak1, 1-20.VI.2011 (3 ♀), same except 10-22.V.2011 (2 ♀); Prov. Hua Phan, Phou Pan, Umg. Ort Ban Saleui, 20°13'30"N, 103°59'26"E, 1350-1900 m MSL, 11.V.2011, leg. C. Holzschuh & locals (2 ♀), same except 21.V.2011 (1 ♀), 16.V.2011 (2 ♂), 18.IV.2012 (1 ♀, 1 ♂), 23.IV.2012 (1 ♀); Hua Phan Prov., Ban Salleui; Phou Pan. Mt., 20°13'30"N, 103°59'26"E, 1350-1900 m, 16.V.2011, leg. C. Holzschuh + locals (2 ♂), same except 18.IV.2010 (1 ♀, 1 ♂), 19.IV.2010 (1 ♂), 01.V.2010 (2 ♀, 1 ♂), 13.V.2010 (1 ♂), 08.V.2011 (3 ♀, 1 ♂), 21.V.2011 (1 ♀, 2 ♂), 13.V.2011 (1 ♀, 1 ♂), 07.V.2011 (1 ♀), 15.V.2011 (2 ♂), 19.V.2011 (1 ♂), 24.IV.2010 (1 ♂), 01.V.2011 (1 ♀), 05.V.2011 (1 ♂), 06.V.2011 (1 ♀), 29.IV.2012 (1 ♀). VIETNAM: Holotype female: "Tonkin (Mauson-Gebirge)" (Konow 1902), „Tonkin, Montes Mauson“ on label (Fig. 1).

**Distribution.** Laos, Vietnam.

**Variation.** The length of specimens of each sex varies by 2 or 3 mm, the female from 15–17 mm and the male from 10–13 mm. The number of antennomeres in the female varies from 21–23 and in the male 27–29. In the forewing, the portion of vein 2A+3A basal to the anal crossvein is partially atrophied in most specimens (17), but faint to present in several (4). In the hind wing in specimens where visible, cell M is absent in most specimens (14), but present or partially present in others (11), or present in one wing and absent in the other (3).

**Discussion.** The holotype was collected in „April, Mai“, consistent with the April and May collection dates of specimens examined.

In existing keys to species of *Cladiucha* (Xiao 1994, Wei 2010), the black color, absence of cell M in the hind wing, length of the female, and number of antennomeres were used to separate *C. insolita*. Both sexes of *C. insolita* will key correctly, though use of these characters needs some discretion because of the variation noted. The black clypeus and pronotum seem to be the most stable characters to use.

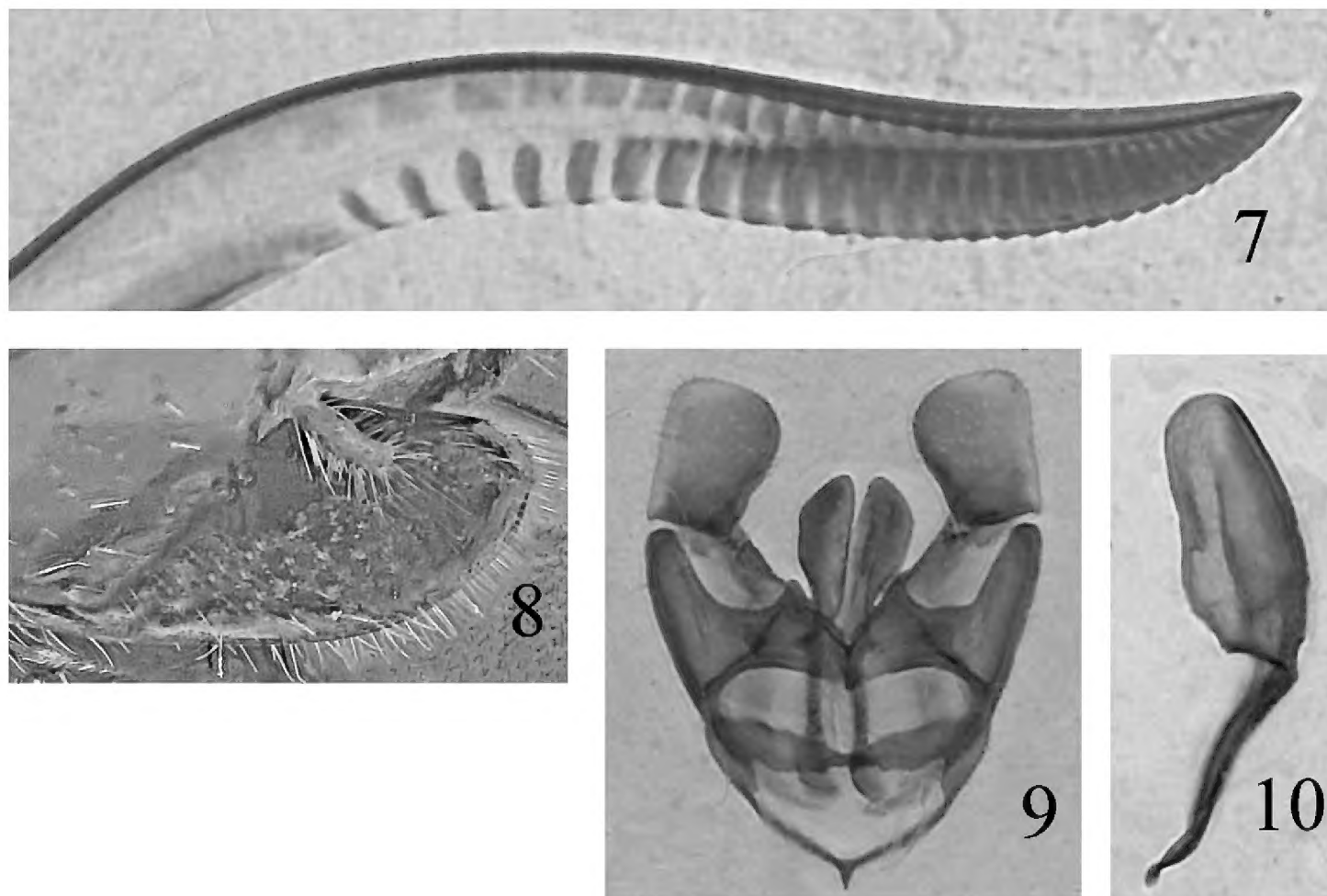
Comparison with the figures in Xiao, the male appears closest to *C. manglietiae* (Xiao 1994, fig. 11). Both have the penis valve of similar shape and strongly curved. In *C. magnoliae*, the penis valve is straight (Wei 2010, fig. 15) and the harpe more oval and broadly rounded apically (Wei 2010, fig. 13) than the longer and more parallel-sided harpe of *C. insolita* (Fig. 9).





**Figures 2–6.** *Cladiucha insolita*. **2** Male, lateral **3** Male, dorsum of head and thorax **4** Male, head front **5** Female antenna **6** Male antenna.

The serrate serrulae of the female with about 6 subbasal teeth, is more similar to *C. magnoliae* (Wei 1997, fig. 15; Wei 2010, fig. 12) than the more widely separated serrulae with only about three subbasal teeth of *C. manglietiae* (Xiao 1994, fig. 7).



**Figures 7–10.** *Cladiucha insolita*. **7** Lancet **8** Sheath, lateral **9** Genital capsule ventral **10** Penis valve, lateral.

Wei (1997) described a new subgenus, *Acladiucha*, for *C. magnoliae*, separated from the typical subgenus by the closed cell M in the hindwing, presence of 19 or 20 antennomeres in the female and 23 in the male, linear malar space, and serrulae of the lancet widely separated. Taeger et al. (2010) did not recognize subgenera and synonymized *Acladiucha* under *Cladiucha*. Considering the variation noted in *C. insolita* and only the slightly broader malar space and shape of the serrulae, recognition of subgenera does not seem warranted.

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